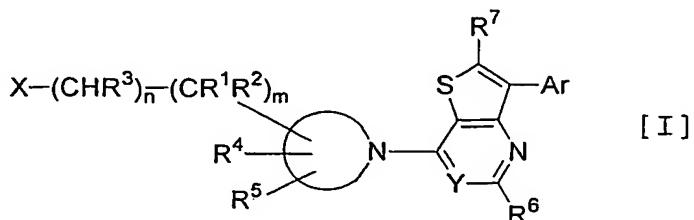
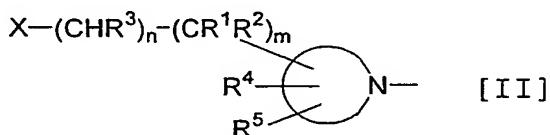


## CLAIMS

1. A thienopyrimidine or thienopyridine derivative substituted with a cyclic amino group represented by the following formula [I]:



(wherein the cyclic amino group is represented by the following formula [II]):



in which the cyclic amino group is a 3- to 8-membered saturated cyclic amine or a 3- to 8-membered saturated cyclic amine bridged with C<sub>1-5</sub>alkylene or C<sub>1-4</sub>alkylene-O-C<sub>1-4</sub>alkylene between any different two carbon atoms of the cyclic amine, which cyclic amine is substituted with a group represented by -(CR<sup>1</sup>R<sup>2</sup>)<sub>m</sub>-(CHR<sup>3</sup>)<sub>n</sub>-X, R<sup>4</sup> and R<sup>5</sup> independently on the same or different carbon atoms of the cyclic amine;

X is cyano, hydroxy, -CO<sub>2</sub>R<sup>8</sup> or -CONR<sup>9</sup>R<sup>10</sup>;

Y is N or CR<sup>11</sup>;

R<sup>1</sup> is hydrogen, hydroxy, C<sub>1-5</sub>alkyl, C<sub>1-5</sub>alkoxy-C<sub>1-5</sub>alkyl or hydroxy-C<sub>1-5</sub>alkyl;

R<sup>2</sup> is hydrogen or C<sub>1-5</sub>alkyl;

R<sup>3</sup> is hydrogen, cyano, C<sub>1-5</sub>alkyl, C<sub>1-5</sub>alkoxy-C<sub>1-5</sub>alkyl or hydroxy-C<sub>1-5</sub>alkyl;

m is an integer selected from 0, 1, 2, 3, 4 and 5;

n is 0 or 1;

R<sup>4</sup> is hydrogen, hydroxy, hydroxy-C<sub>1-5</sub>alkyl, cyano, cyano-C<sub>1-5</sub>alkyl or C<sub>1-5</sub>alkyl;

R<sup>5</sup> is hydrogen or C<sub>1-5</sub>alkyl;

R<sup>6</sup> is hydrogen, C<sub>1-5</sub>alkyl, C<sub>3-8</sub>cycloalkyl, C<sub>3-8</sub>cycloalkyl-C<sub>1-5</sub>alkyl, hydroxy, C<sub>1-5</sub>alkoxy, C<sub>3-8</sub>cycloalkyloxy, halogen, C<sub>1-5</sub>alkylthio or -N(R<sup>12</sup>)R<sup>13</sup>;

31

$R^7$  is hydrogen, halogen,  $C_{1-5}$ alkyl,  $C_{3-8}$ cycloalkyl,  $C_{3-8}$ cycloalkyl-C<sub>1</sub>-alkyl, hydroxy,  $C_{1-5}$ alkoxy,  $C_{3-8}$ cycloalkyloxy, -N( $R^{14}$ ) $R^{15}$ , -CO<sub>2</sub> $R^{16}$ , -CON( $R^{17}$ ) $R^{18}$ , cyano, nitro,  $C_{1-5}$ alkylthio, trifluoromethyl or trifluoromethoxy;

Ar is aryl or heteroaryl which aryl or heteroaryl is unsubstituted or substituted with 1 or more substituents, which are the same or different, selected from the group consisting of halogen,  $C_{1-5}$ alkyl,  $C_{3-8}$ cycloalkyl,  $C_{2-5}$ alkenyl,  $C_{2-5}$ alkynyl,  $C_{1-5}$ alkoxy,  $C_{1-5}$ alkylthio,  $C_{1-5}$ alkylsulfinyl,  $C_{1-5}$ alkylsulfonyl, cyano, nitro, hydroxy, -CO<sub>2</sub> $R^{19}$ , -C(=O) $R^{20}$ , -CONR<sup>21</sup> $R^{22}$ , -OC(=O) $R^{23}$ , -NR<sup>24</sup>CO<sub>2</sub> $R^{25}$ , -S(=O) $NR^{26}R^{27}$ , trifluoromethyl, trifluoromethoxy, difluoromethoxy, fluoromethoxy, methylenedioxy, ethylenedioxy and -N( $R^{28}$ ) $R^{29}$ ;

$R^8$  is hydrogen,  $C_{1-10}$ alkyl,  $C_{3-8}$ cycloalkyl,  $C_{3-8}$ cycloalkyl-C<sub>1-5</sub>alkyl, aryl or aryl-C<sub>1-5</sub>alkyl;

$R^9$  and  $R^{10}$  are the same or different, and independently are hydrogen,  $C_{1-5}$ alkyl,  $C_{3-8}$ cycloalkyl,  $C_{3-8}$ cycloalkyl-C<sub>1-5</sub>alkyl, aryl or aryl-C<sub>1-5</sub>alkyl; or  $R^9$  and  $R^{10}$  form a ring selected from saturated 3 to 8 membered ring with the attached nitrogen atom, wherein one of the carbon atoms of such saturated 3 to 8 membered ring is optionally replaced by an oxygen or sulfur atom or by N-Z wherein Z is hydrogen, benzyl or  $C_{1-5}$ alkyl;

$R^{11}$  is hydrogen, halogen or  $C_{1-5}$ alkyl;

$R^{12}$ ,  $R^{13}$ ,  $R^{14}$  and  $R^{15}$  are the same or different, and independently are hydrogen or  $C_{1-5}$ alkyl;

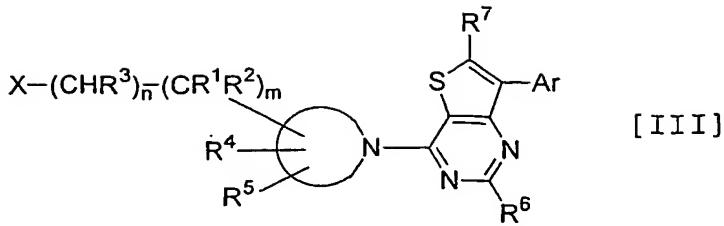
$R^{16}$ ,  $R^{19}$  and  $R^{25}$  are the same or different, and independently are hydrogen or  $C_{1-5}$ alkyl,  $C_{3-8}$ cycloalkyl,  $C_{3-8}$ cycloalkyl-C<sub>1-5</sub>alkyl, aryl or aryl-C<sub>1-5</sub>alkyl;

$R^{17}$ ,  $R^{18}$ ,  $R^{20}$ ,  $R^{21}$ ,  $R^{22}$ ,  $R^{23}$ ,  $R^{24}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{28}$  and  $R^{29}$  are the same or different, and independently are hydrogen,  $C_{1-5}$ alkyl or  $C_{3-8}$ cycloalkyl;

r is 1 or 2)

, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, pharmaceutically acceptable prodrugs thereof or pharmaceutically acceptable salts and hydrates thereof.

2. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 1 represented by the following formula [III]:



(wherein X, m, n, the cyclic amino group, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup> and Ar are as defined in claim 1), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

3. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is cyano; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C<sub>1-3</sub>alkyl, C<sub>1-3</sub>alkoxy, C<sub>1-3</sub>alkylthio, trifluoromethyl, trifluoromethoxy and -N(R<sup>28</sup>)R<sup>29</sup> (wherein R<sup>28</sup> and R<sup>29</sup> are the same or different, and independently are hydrogen or C<sub>1-3</sub>alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

4. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is cyano; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is 0 or 1; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C<sub>1-3</sub>alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

5. The thienopyrimidine derivative substituted with the cyclic amino group

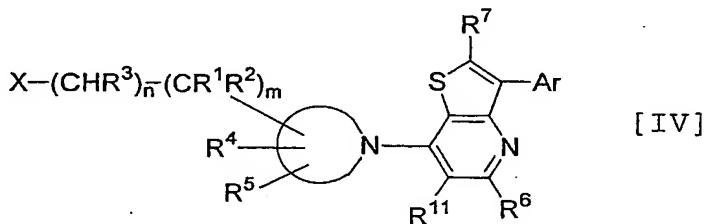
according to claim 2 represented by formula [III], wherein X is hydroxy; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C<sub>1-3</sub>alkyl, C<sub>1-3</sub>alkoxy, C<sub>1-3</sub>alkylthio, trifluoromethyl, trifluoromethoxy and -N(R<sup>28</sup>)R<sup>29</sup> (wherein R<sup>28</sup> and R<sup>29</sup> are the same or different, and independently are hydrogen or C<sub>1-3</sub>alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

6. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is hydroxy; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C<sub>1-3</sub>alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

7. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is -CO<sub>2</sub>R<sup>8</sup> or -CONR<sup>9</sup>R<sup>10</sup>; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; R<sup>8</sup> is hydrogen or C<sub>1-10</sub>alkyl; R<sup>9</sup> and R<sup>10</sup> are the same or different, and independently are hydrogen or C<sub>1-5</sub>alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C<sub>1-3</sub>alkyl, C<sub>1-3</sub>alkoxy, C<sub>1-3</sub>alkylthio, trifluoromethyl, trifluoromethoxy and -N(R<sup>28</sup>)R<sup>29</sup> (wherein R<sup>28</sup> and R<sup>29</sup> are the same or different, and independently are hydrogen or C<sub>1-3</sub>alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

8. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is  $-CO_2R^8$  or  $-CONR^9R^{10}$ ; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3;  $R^1$ ,  $R^2$ ,  $R^4$  and  $R^5$  are hydrogen;  $R^6$  is  $C_{1-5}$ alkyl;  $R^7$  is hydrogen or  $C_{1-5}$ alkyl;  $R^8$  is hydrogen or  $C_{1-10}$ alkyl;  $R^9$  and  $R^{10}$  are the same or different, and independently are hydrogen or  $C_{1-3}$ alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and  $C_{1-3}$ alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

9. The thienopyridine derivative substituted with the cyclic amino group according to claim 1 represented by the following formula [IV]:



(wherein X, m, n, the cyclic amino group,  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^{11}$  and Ar are as defined in claim 1), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

10. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is cyano; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3;  $R^1$ ,  $R^2$ ,  $R^4$  and  $R^5$  are hydrogen;  $R^6$  is  $C_{1-5}$ alkyl;  $R^7$  is hydrogen or  $C_{1-5}$ alkyl;  $R^{11}$  is hydrogen or  $C_{1-5}$ alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen,  $C_{1-3}$ alkyl,  $C_{1-3}$ alkoxy,  $C_{1-3}$ alkylthio, trifluoromethyl, trifluoromethoxy and  $-N(R^{28})R^{29}$  (wherein  $R^{28}$  and  $R^{29}$  are the same or different, and independently are hydrogen or  $C_{1-3}$ alkyl), individual isomers

thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

11. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is cyano; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is 0 or 1; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; R<sup>11</sup> is hydrogen; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C<sub>1-3</sub>alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

12. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is hydroxy; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; R<sup>11</sup> is hydrogen or C<sub>1-5</sub>alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C<sub>1-3</sub>alkyl, C<sub>1-3</sub>alkoxy, C<sub>1-3</sub>alkylthio, trifluoromethyl, trifluoromethoxy and -N(R<sup>28</sup>)R<sup>29</sup> (wherein R<sup>28</sup> and R<sup>29</sup> are the same or different, and independently are hydrogen or C<sub>1-3</sub>alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

13. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is hydroxy; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup> and R<sup>5</sup> are hydrogen; R<sup>6</sup> is C<sub>1-5</sub>alkyl; R<sup>7</sup> is hydrogen or C<sub>1-5</sub>alkyl; R<sup>11</sup> is hydrogen; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C<sub>1-3</sub>alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

14. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is  $-CO_2R^8$  or  $-CONR^9R^{10}$ ; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3;  $R^1$ ,  $R^2$ ,  $R^4$  and  $R^5$  are hydrogen;  $R^6$  is  $C_{1-5}alkyl$ ;  $R^7$  is hydrogen or  $C_{1-5}alkyl$ ;  $R^8$  is hydrogen or  $C_{1-10}alkyl$ ;  $R^9$  and  $R^{10}$  are the same or different, and independently are hydrogen or  $C_{1-5}alkyl$ ;  $R^{11}$  is hydrogen or  $C_{1-5}alkyl$ ; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen,  $C_{1-3}alkyl$ ,  $C_{1-3}alkoxy$ ,  $C_{1-3}alkylthio$ , trifluoromethyl, trifluoromethoxy and  $-N(R^{28})R^{29}$  (wherein  $R^{28}$  and  $R^{29}$  are the same or different, and independently are hydrogen or  $C_{1-3}alkyl$ ), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

15. The thienopyridine derivative substituted with the cyclic amino group according to claim 2 represented by formula [IV], wherein X is  $-CO_2R^8$  or  $-CONR^9R^{10}$ ; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3;  $R^1$ ,  $R^2$ ,  $R^4$  and  $R^5$  are hydrogen;  $R^6$  is  $C_{1-5}alkyl$ ;  $R^7$  is hydrogen or  $C_{1-5}alkyl$ ;  $R^8$  is hydrogen or  $C_{1-10}alkyl$ ;  $R^9$  and  $R^{10}$  are the same or different, and independently are hydrogen or  $C_{1-5}alkyl$ ;  $R^{11}$  is hydrogen; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and  $C_{1-3}alkyl$ , individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

16. Compounds represented by formula [I] according to claim 1, which compounds are selected from the group consisting of

{1-[7-(4-Bromo-2,6-dimethyl-phenyl)-2-methyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-methanol,

{1-[7-(4-bromo-2,6-dimethyl-phenyl)-2,6-dimethyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-methanol,

2-{1-[7-(4-bromo-2,6-dimethyl-phenyl)-2,6-dimethyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-ethanol,  
{1-[7-(4-bromo-2,6-dimethyl-phenyl)-2,6-dimethyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-acetonitrile,  
{1-[3-(2,4-dichloro-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,  
{1-[5-methyl-3-(2,4,6-trimethyl-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,  
{1-[3-(4-bromo-2,6-dimethyl-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,  
{1-[3-(4-bromo-2,6-dimethyl-phenyl)-2,5-dimethyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,  
{1-[3-(2,4-dibromo-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,  
{1-[5-methyl-3-(2,4,6-trichloro-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,  
2-{1-[3-(4-bromo-2,6-dimethyl-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,  
2-{1-[3-(4-bromo-2,6-dimethyl-phenyl)-2,5-dimethyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,  
2-{1-[3-(2,4-dibromo-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,  
2-{1-[5-methyl-3-(2,4,6-trichloro-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,  
1-[5-methyl-3-(2,4,6-trimethyl-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidine-3-carbonitrile,  
{1-[3-(4-bromo-2,6-dimethyl-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-acetonitrile,  
{1-[3-(4-bromo-2,6-dimethyl-phenyl)-2,5-dimethyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-acetonitrile,  
{1-[3-(2,4-dibromo-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-acetonitrile  
and {1-[5-methyl-3-(2,4,6-trichloro-phenyl)-thieno[3,2-b]pyridin-7-yl]-

piperidin-4-yl}-acetonitrile.

17. An antagonist for CRF receptors, comprising a thienopyrimidine or thienopyridine derivative substituted with a cyclic amino group, a pharmaceutically acceptable salt thereof or its hydrate according to any one of claims 1 to 16, as an active ingredient.

18. Use of a thienopyrimidine or thienopyridine derivative substituted with a cyclic amino group, a pharmaceutically acceptable salt thereof or its hydrate according to any one of claim 1 to 16, for the manufacture of a therapeutic agent as an antagonist for CRF receptors.